DETAILED ACTION

Response to Amendment

1. The amendment filed on 08-01-2011 has been entered and considered.

Claims 1-2, 4-12 and 15-23 are pending in this application.

Claims 3 and 13-14 are canceled.

Claim 23 is newly added.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 4-12 and 15-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vogel et al (US 7,130,283) in view of Cable et al (US 6,854,013), Elwalid et al (US 6,567,415) and Benveniste (US 2002/0163933).

For claim 1, Vogel discloses a method to allocate bandwidth to connections of a network, which method is implemented at a central controller of a network (see col.3 lines 5-10 and Figure 1 element 420; bandwidth manager), comprising: allocating, at the central controller, an amount of bandwidth to a connection requiring a certain QoS (see column 6 lines 4-18; UT 220 of Fig.1 get allocated "Full Allocation" that satisfy a specific data rate "full rate" (claimed certain QOS)), wherein an operator of the connection is a requesting terminal which is a terminal of the network (see Figure 1 and see column 6

lines 4-18, UT 220 requesting the bandwidth through the reverse/backward/return communication channel); freeing, at the central controller, a certain amount of the allocated amount of bandwidth as freed bandwidth after receiving a resource request from the operator of the connection indicating actual needed amount of bandwidth (see Figure 1, bandwidth manager and see column 6 lines 5-18 and/or column 6 line 61 to column 7 line 2; release the full bandwidth to minimum or no bandwidth (unused/freed bandwidth) based on data in the buffer and the transition from one state to another based on the transmission of the transition request and/or column 7 lines 16-19; UT sends the full-to-minimum bandwidth transition request), wherein the actual needed amount of bandwidth does not exceed said amount of bandwidth (see column 6 lines 5-18 and/or column 7 lines 16-19; UT sends the full-to-minimum bandwidth transition request, wherein the full is the allocated amount of BW and minimum is the needed BW) and said freed bandwidth is a difference between the allocated amount of bandwidth and the actual needed amount of bandwidth (see column 6 lines 5-18 and/or column 6 line 67 to column 7 line 1; releasing (freeing) full bandwidth since no data in buffer to transmit), when said operator of the connection transmits a request for a new needed amount of bandwidth greater than said needed amount of bandwidth (see column 6 lines 5-18 and/or col.7 lines 20-26; in case of more packets in the buffer, the UT sends a countermanding request in column 6 lines 5-18 and/or column 7 lines 39-42; the transition from minimum to full BW), the new needed amount of bandwidth not exceeding said amount of bandwidth (column 6 lines 5-18 and/or column 7 lines 39-42; the transition from minimum to full BW (the BW requested does not exceed full BW),

immediately returning as much of the freed bandwidth as required so that said new needed amount of bandwidth is available to said operator of the connection (see column 6 lines 5-18 and/or column 7 lines 39-42; the transition from minimum to full BW to secure clearing buffers from building up); determining, in the requesting terminal, a filling status of a transmit queue which indicates how much sending data is in the transmit queue (see column 7 lines 10-12; the current amount of backlogged data in the buffer), determining, in the requesting terminal, said actual needed amount of bandwidth as bandwidth needed in a next transmission frame, the actual needed amount of bandwidth depending on the filling status of the transmit queue and not exceeding the amount of bandwidth (see column 7 lines 14-20; determination to transition from full bandwidth state to minimum bandwidth state based on filling status of the buffer and wherein the transition to another state reads on the "next transmission frame"), and transmitting, from the requesting terminal, the actual needed amount of bandwidth to the central controller with a current transmission frame (see column 7 lines 17-19; the transmission of the transition BW request in *anticipation* of emptying the buffer which means that the request is sent in the full bandwidth state "current transmission frame" since the terminal still emptying the buffer by the use of the full bandwidth).

Vogel discloses all the subject matter with the exception of disclosing that the connection is a QoS connection, the amount of bandwidth is fixed and that the fixed amount of bandwidth is independent from an actual needed amount of bandwidth. However, Cable discloses a method that optimizes network bandwidth for QoS connection by the use of RSVP that reserves and allocates fixed amount of bandwidth

and wherein the fixed amount of bandwidth is independent from an actual needed amount of bandwidth (see at least col.2 lines 44-55, col.5 lines 31-32, col. 60-65; the use of QoS which satisfies QoS connection and the use of RSVP protocol which allocates fixed amount of bandwidth that is independent from an actual needed amount of bandwidth since it is fixed and the optimal use of fixed QoS connection by freeing unneeded bandwidth). Thus, it would have been obvious to the one ordinary skill in the art at the time of the invention to use the teaching of Cable into method of Vogel for the purpose of making use of bandwidth optimally (see at least Cable col.2 lines 52-53) and still satisfying QoS.

Vogel in view of Cable discloses all the subject matter with the exception of explicitly disclosing allocating the freed BW to a non-QOS connection. However, Elwalid discloses allocating the freed BW to a non-QOS connection (see column 6 lines 46-49; the allocation of unused BW from QOS connections to non-QOS connections (best effort)). Thus, it would have been obvious to the one ordinary skill in the art at the time of the invention to use the allocation method of unused BW to non-QOS connections of Elwalid into method of Vogel in view of Cable for the purpose of maximizing the BW available to best effort traffic (non-QOS connections) while satisfying the guaranteed of the QOS classes (see at least Elwalid col.3 lines 15-18).

Vogel in view of Cable and Elwalid discloses all the subject matter with the exception wherein the network is an ad-hoc network. However, Benveniste discloses the use of an ad-hoc network (see at least [0033]). Thus, it would have been obvious to the one ordinary skill in the art at the time of the invention to use the teaching of

Benveniste (an ad-hoc network) into the method of Vogel in view of Cable and Elwalid for the purpose of having the advantage of adding quickly new devices and benefiting from all the advantages of the ad-hoc network.

For claims 2 and 16, Elwalid discloses a method characterized by allocating some or all of the freed bandwidth to another connection, the another connection being a connection without a fixed amount of allocated bandwidth (see column 6 lines 46-49; the allocation of unused BW from QOS connections to non-QOS connections (best effort)). And, Benveniste discloses the ad-hoc network (see [0033]).

Claims 4 and 5 are rejected for same reasons as claim 1.

Claim 17 is rejected for same reasons as claim 2.

For claims 6, 9, 11 and 12, Benveniste discloses that ETSI HIPERLAN/2 is the European counterpart to the American 802.11a with QOS features (see [0017]). Thus it would have been obvious to the ordinary skill in the art at the time of invention to modify the network as taught by Vogel in view of Cable and Elwalid to an ad hoc network operated according to the ETSI HIPERLAN/2 standard for the purpose of the direct communication of the terminals without a network controller or base station and using the ETSI HIPERLAN/2 standard so it can operate in Europe.

Claims 7 and 8 are rejected for same reasons as claim 1 since the claims 7 and 8 are the system claims that implement the method claim 1.

Claim 10 is rejected for same reasons as claim 1.

For claim 15, Vogel in view of Cable, Elwalid and Benveniste further discloses a method wherein the freed bandwidth is re-allocated in a next transmission frame (See at

least Vogel: see Col. 3 lines 5-9 column 7 lines 1-49; the allocation of the unused bandwidth and/or Cable: col.2 lines 44-55; the re-allocation of the unneeded BW for a next transmission frame to be used).

For claims 18-21, Vogel further discloses that the transition to Full BW is based on input buffer (filling status of the transmit queue) (see col.3 lines 27-29). Vogel in view of Cable, Elwalid and Benveniste disclose all the subject matter with the exception of explicitly disclosing determining of said actual needed amount of BW based only on the filling status of the transmit queue. However, Vogel further discloses determining of said actual needed amount of BW based on the filling status of the transmit queue and the values of T1 and T2 (see col.7 lines 14-17). It is generally considered to within the ordinary skill in the art to adjust, vary, select, or optimize the numerical parameters or values of any system. Thus, it would have been obvious to the one ordinary skill in the art at the time of the invention to adjust the value of T1 and T2 to be a zero since zero is also a numeric value. The motivation is to have a simple system that varies only based on the data in the input buffers and therefore avoid any wasting of bandwidth that may occur by the introduction of any other values/variables.

For claims 22 and 23, Vogel discloses a method to allocate bandwidth to connections of a network, which method is implemented at a central controller of a network (see col.3 lines 5-10 and Figure 1 element 420; bandwidth manager), comprising: allocating, at the central controller, an amount of bandwidth to a connection requiring a certain QoS (see column 6 lines 4-18; UT 220 of Fig.1 get allocated "Full Allocation" that satisfy a specific data rate "full rate" (claimed certain QOS)), wherein an

owner of the connection is a requesting terminal which is a terminal of the network (see Figure 1 and see column 6 lines 4-18, UT 220 requesting the bandwidth through the reverse/backward/return communication channel); freeing, at the central controller, a certain amount of the allocated amount of bandwidth as freed bandwidth after receiving a resource request from the operator of the connection indicating actual needed amount of bandwidth (see Figure 1, bandwidth manager and see column 6 lines 5-18 and/or column 6 line 61 to column 7 line 2; release the full bandwidth to minimum or no bandwidth (unused/freed bandwidth) based on data in the buffer and the transition from one state to another based on the transmission of the transition request), wherein the actual needed amount of bandwidth does not exceed said amount of bandwidth (see column 6 lines 5-18 and/or column 7 lines 16-19; UT sends the full-to-minimum bandwidth transition request, wherein the full is the allocated amount of BW and minimum is the needed BW) and said freed bandwidth is a difference between the allocated amount of bandwidth and the actual needed amount of bandwidth (see column 6 lines 5-18 and/or column 6 line 67 to column 7 line 1; releasing (freeing) full bandwidth since no data in buffer to transmit), when said operator of the connection transmits a request for a new needed amount of bandwidth greater than said needed amount of bandwidth (see column 6 lines 5-18 and/or col.7 lines 20-26; in case of more packets in the buffer, the UT sends a countermanding request in column 6 lines 5-18 and/or column 7 lines 39-42; the transition from minimum to full BW), the new needed amount of bandwidth not exceeding said amount of bandwidth (column 6 lines 5-18 and/or column 7 lines 39-42; the transition from minimum to full BW (the BW requested

does not exceed full BW), immediately returning as much of the freed bandwidth as required so that said new needed amount of bandwidth is available to said operator of the connection (see column 6 lines 5-18 and/or column 7 lines 39-42; the transition from minimum to full BW to secure clearing buffers from building up).

Vogel discloses all the subject matter with the exception of disclosing that the connection is a video QoS connection, the amount of bandwidth is fixed and that the fixed amount of bandwidth is independent from an actual needed amount of bandwidth. However, Cable discloses a method that optimizes network bandwidth for video QoS connection by the use of RSVP that reserves and allocates fixed amount of bandwidth and wherein the fixed amount of bandwidth is independent from an actual needed amount of bandwidth (see at least col.2 lines 44-55, col.5 lines 31-32, col. 60-65; the use of QoS which satisfies at least Video connection and the use of RSVP protocol which allocates fixed amount of bandwidth that is independent from an actual needed amount of bandwidth since it is fixed and the optimal use of fixed QoS connection by freeing unneeded bandwidth). Thus, it would have been obvious to the one ordinary skill in the art at the time of the invention to use the teaching of Cable into method of Vogel for the purpose of making use of bandwidth optimally (see at least Cable col.2 lines 52-53) and still satisfying QoS.

Vogel in view of Cable discloses all the subject matter with the exception of explicitly disclosing allocating the freed BW to a non-QOS connection. However, Elwalid discloses allocating the freed BW to a non-QOS connection (see column 6 lines 46-49; the allocation of unused BW from QOS connections to non-QOS connections

(best effort)). Thus, it would have been obvious to the one ordinary skill in the art at the time of the invention to use the allocation method of unused BW to non-QOS connections of Elwalid into method of Vogel in view of Cable for the purpose of maximizing the BW available to best effort traffic (non-QOS connections) while satisfying the guaranteed of the QOS classes (see col.3 lines 15-18).

Vogel in view of Cable and Elwalid discloses all the subject matter with the exception wherein the network is an ad-hoc network. However, Benveniste discloses that the use of an ad-hoc network (see at least [0033]). Thus, it would have been obvious to the one ordinary skill in the art at the time of the invention to use the teaching of Benveniste (an ad-hoc network) into the method of Vogel in view of Cable and Elwalid for the purpose of having the advantage of adding quickly new devices and benefiting from all the advantages of the ad-hoc network.

Response to Argument

3. Applicant's arguments filed have been fully considered but they are not persuasive.

In response to applicant's arguments, in pages 12-16 of the Remarks in regard of claim 1, against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The claims are rejected based on combination of multiple references. Therefore, arguing only one reference instead of the combination is improper. It is clear that Vogel

discloses a method to allocate bandwidth to connections of a network, which method is implemented at a central controller of a network (see col.3 lines 5-10 and Figure 1 element 420; bandwidth manager).

In page 12 of the Remarks, the applicant argues that Vogel does not teach a central controller that receives a request resource from an operator indicating an actual needed amount of bandwidth. However, the examiner disagrees because in Figure 1, bandwidth manager, BWM, 400 (claimed central controller) is in communication with a user terminal 200 which includes bandwidth requestor 220 (claimed resource request) that sends bandwidth requests to the bandwidth manager. Moreover, column 6 lines 5-18 (full bandwidth *request* received by BWM) and/or column 6 line 61 to column 7 line 2, disclose the steps of releasing the full bandwidth to minimum or no bandwidth (unused/freed bandwidth) based on data in the buffer and the transition from one state to another based on the transmission of the *transition request* (claimed resource request). Also, Vogel discloses freeing, at the central controller, a certain amount of the allocated amount of bandwidth as freed bandwidth after receiving a resource request from the operator of the connection indicating actual needed amount of bandwidth (see Figure 1, bandwidth manager and see column 6 lines 5-18 and/or column 6 line 61 to column 7 line 2; releasing (freeing) the full bandwidth to minimum or no bandwidth (unused/freed bandwidth) based on data in the buffer and the transition from one state to another based on the transmission of the transition request and also see column 7 lines 16-19; UT sends the full-to-minimum bandwidth transition request, wherein the full is the allocated amount of BW and minimum is the needed BW)).

In Remarks page 13, the Applicant argues that Cable does not disclose that the connection is a QoS connection, the amount of bandwidth is fixed and that the fixed amount of bandwidth is independent from an actual needed amount of bandwidth. However, the examiner disagrees because Cable clearly discloses a method that optimizes network bandwidth for QoS connection by the use of RSVP that reserves and allocates fixed amount of bandwidth and wherein the fixed amount of bandwidth is independent from an actual needed amount of bandwidth (see at least col.2 lines 44-55, col.5 lines 31-32, col. 60-65; the use of QoS which satisfies QoS connection and the use of RSVP protocol which allocates fixed amount of bandwidth that is independent from an actual needed amount of bandwidth since it is fixed and the optimal use of fixed QoS connection by freeing unneeded bandwidth). Therefore, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Finally, in response to applicant's argument, in page 15 of the Remarks, that there is no teaching, suggestion, or motivation to combine the references, the examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*,

837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, Vogel discloses the re-allocation and the re-used of unneeded bandwidth method of at least one user (connection) with the exception of disclosing that the connection is a QoS connection, the amount of bandwidth is fixed and that the fixed amount of bandwidth is independent from an actual needed amount of bandwidth. However, Cable discloses a method that optimizes network bandwidth for QoS connection by the use of RSVP that reserves and allocates fixed amount of bandwidth and wherein the fixed amount of bandwidth is independent from an actual needed amount of bandwidth (see at least col.2 lines 44-55, col.5 lines 31-32, col. 60-65; the use of QoS which satisfies QoS connection and the use of RSVP protocol which allocates fixed amount of bandwidth that is independent from an actual needed amount of bandwidth since it is fixed and the optimal use of fixed QoS connection by freeing unneeded bandwidth). Thus, it would have been obvious to the one ordinary skill in the art at the time of the invention to use the teaching of Cable into method of Vogel for the purpose of making use of bandwidth optimally (see at least Cable col.2 lines 52-53) and still satisfying QoS.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. **Examiner's Note**: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

When responding to this office action, applicants are advised to clearly point out the patentable novelty which they think the claims present in view of the state of the art disclosed by the references cited or the objections made. Applicants must also show how the amendments avoid such references or objections. See 37C.F.R 1.111(c). In addition, applicants are advised to provide the examiner with the line numbers and

pages numbers in the application and/or references cited to assist examiner in locating

the appropriate paragraphs.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HICHAM B. FOUD whose telephone number is (571)270-1463. The examiner can normally be reached on Monday - Friday 10-6 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Phillips can be reached on 571-272-3940. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. B. F./
Examiner, Art Unit 2467

/ROBERT C. SCHEIBEL/
Primary Examiner, Art Unit 2467